



CENTRE FOR DISEASE CONTROL
NORTHERN TERRITORY

Guidelines for the Control of Acute Post-Streptococcal Glomerulonephritis

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Northern Territory Government
Department of Health and Community Services

COMMENTS ARE WELCOME AND SHOULD BE DIRECTED TO THE PROJECT/RESEARCH OFFICER AT:

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Background

Acute post-streptococcal glomerulonephritis (APSGN) is an inflammatory disease of the kidneys which occurs 2 to 3 weeks after skin or throat infection with a particular type of bacteria called group A streptococcus (GAS), or occasionally groups C or G streptococcus. In the Northern Territory (NT) most cases follow skin rather than throat infections because skin infections are the more common problem. Not all types of streptococcus cause kidney problems but only those caused by “nephritogenic” strains.

APSGN can cause haematuria, high blood pressure, oedema and poor renal function. It most commonly affects children but can occur at any age. For each clinical case of APSGN there are likely to be three to four cases of sub-clinical disease. The usual outcome is one of complete recovery, however, some studies of outbreaks have documented progression to chronic glomerulonephritis in 3.5 to 5 % of cases.^{1 2} Frequent mild cases of mild APSGN are a contributing factor to end stage renal disease in Australian Aboriginals.^{3 4}

The epidemiology of outbreaks of APSGN in the Northern Territory remains unchanged over the years, predominantly affecting children, aged between 3-13 years, occurring in the dry season months.⁵ Sporadic cases of APSGN occur in the NT each year with outbreaks occurring every 5-7 years⁵ associated with the circulation of a new strain of a nephritogenic streptococcus. In communities with high levels of scabies, skin sores and overcrowded living conditions new strains spread very quickly. There is evidence that outbreaks can be halted by treating all children with any evidence of skin sores with intra-muscular (IM) benzathine

penicillin (also known as LA Bicillin)⁶ to stop the transmission of the bacteria in the community. In the absence of any intervention new cases can continue for several months.

Case Definition of APSGN

i. Clinical case definition

(cases that have 2 of the following clinical manifestations should be notified to CDC by phone)

- oedema (swelling of the face or limbs)
- macroscopic haematuria (visibly dark urine) or haematuria of 2 + or more on dipstick
- high blood pressure (diastolic BP >80 if 13 years of age or younger, or >90 if above 13 years)

ii. Case definition for notification of cases to the NT notifiable diseases database

(Clinically compatible illness with 2 or more of the following manifestations)

- oedema (swelling of the face or limbs)
- macroscopic haematuria (visibly dark urine) or haematuria of 2 + or more on dipstick
- high blood pressure (diastolic BP >80 if 13 years of age or younger, or >90 if above 13 years)

PLUS

- a reduced Complement three (C3) level

PLUS

evidence of a streptococcal infection by either :

- elevated ASO or Anti DNAase B titres
- positive Group A Streptococcal culture from the skin if sores are present or from the throat in the absence of skin sores

Subclinical cases are often found when screening individuals for APSGN but do not present with clinically compatible illnesses. They do not have oedema or hypertension but on laboratory investigation are found to have haematuria, evidence of a streptococcal infection and a reduced C3. These cases are also notifiable.

Control of APSGN

1. Prevention

Control of scabies and skin sores

In the NT, scabies infestation is the major cause of infected skin sores that carry the streptococcus. To help prevent epidemics of APSGN:

- promote community control of scabies and skin sores,
- promote regular washing, especially of children, to decrease spread of the bacteria; and
- treat skin sores with a single IM dose of benzathine penicillin.*

For further information refer to:

- Section on skin infections in *CARPA Standard Treatment Manual*.
- Guidelines for Community Control of Scabies and Skin Sores and Crusted Scabies in the Northern Territory 2002

Improved housing

Housing construction and maintenance are beyond the direct control of health centres' staff. However, it is important that health staff support initiatives that improve housing, reduce overcrowding and subsequent

overuse of household facilities, as these are major contributing factors in the spread of all communicable diseases.

2. Sporadic (single) clinical cases of APSGN

Single cases may or may not indicate the beginning of an outbreak. All suspected cases should be discussed with a doctor and notified by telephone to your regional CDC. In patients presenting with a clinically compatible illness of oedema, haematuria and/or hypertension the skin needs to be inspected for evidence of skin sores or scabies. A swab should be taken of the skin sore if present, otherwise a throat swab, if indicated, for identification of GAS. Blood also needs to be collected to measure the ASO, antiDNAase B titres and the C3. After the laboratory specimens have been collected, treat skin sores by administration of benzathene penicillin according to the person's weight is recommended. Treat scabies, with 5% permethrin, if present (refer to Guidelines for Community Control of Scabies, Skin Sores and Crusted Scabies in the Northern Territory).

Prevention of further disease following a single case

The family, household and close contacts (close friends, intimate contacts) of the case should be examined for APSGN and if aged 3-15 years also given an injection of benzathene penicillin. Examination of contacts involves inspection of the skin for sores, scabies and oedema, measuring the blood pressure for hypertension and testing urine for the presence of haematuria. Laboratory investigations are only recommended if clinical signs of APSGN are present (haematuria, oedema and/or hypertension).

Contacts not in the 3-15 year age group require treatment with penicillin only if skin sores are present. All individuals identified with scabies and their contacts should be treated with 5% permethrin.

Some cases will require admission for management of high blood pressure and, sometimes, renal failure. All cases should be followed up by the doctor and have a blood test 6 to 8 weeks later to confirm the C3 level has returned to normal.

3. Community outbreaks

Definition

2 unrelated cases that meet the clinical definition of APSGN (without laboratory confirmation) in one week.

OR

3 clinical cases in one month that are not epidemiologically linked as a family, household or close contact.

Action

If the case definition above is met, discussion with the CDC is required to co-ordinate an outbreak response to control the spread of GAS in the community.

Outbreak intervention – to halt further transmission of infection within the community

In addition to examining and treating contacts of cases (as described in section 2).

- Community education about the problem particularly including health staff, parents and teachers. The use of written health alerts and verbal discussions with prominent community members are essential to reach a range of people.
- Obtain consent from the health centre, community members and parents to screen all children up to the age of 15 years for skin sores, scabies and oedema. Permission should be sought for the screening to occur in the clinic, school and community to improve the number of children able to be screened.
- A population list is essential to identify the number of children that require screening and to record the results. Population lists are often held by the clinic or can be obtained from the DH&CS epidemiology branch.
- If skin sores are present administration of IM benzathene penicillin is recommended.
- If scabies are identified then treatment of the case and all household contacts with 5% topical permethrin is recommended.
- If oedema is present then the child must be examined thoroughly for manifestations of APSGN.

Sores may affect over 50 % of children in a community. As a rough estimate, the total community population divided by 4 will give a guide to the number of doses of penicillin that may be required.

Most interventions are done in co-operation with teachers to find and treat children at school. Parents often bring younger children to the health centre

if there has been good publicity about the problem, otherwise door to door household visits may be the only way to find and treat children who do not go to school.

Remember that skin sores should be treated even without an outbreak of APSGN. The intervention allows the opportunity to enhance standard treatment, halt an epidemic and provide education about scabies, skin sores, APSGN and how to prevent the spread of infections (refer to section on prevention).

Dosage table for benzathine penicillin*

Weight	Dose of benzathine penicillin (LA Bicillin)
10 to <15 kg	1 ml
15 to <20 kg	1.5 mls
20 kg or more	2 mls

From *Therapeutic Guidelines: Antibiotic*, Version 11, 2000. Therapeutic Guidelines Limited

*Those allergic to penicillin should receive appropriate alternative treatment such as oral erythromycin, twice daily for 10 days. Check recommendations in the current *Therapeutic Guidelines: Antibiotic*.

It is important that the data collected by the communities during an intervention be reported and a copy added to the cumulative file on APSGN and outbreaks in CDC for evaluation purposes.

References

1. Potter EV, Lipschultz SA, Abidh S, Poon-King T, Earle D. Twelve to Seventeen-Year Follow-up of Patients with Poststreptococcal Acute Glomerulonephritis in Trinidad. *N Engl J Med.* 1982; 307:725-729.
2. Hoeprich P, Jordan M & Ronald A, *Infectious Disease. A Treatise if Infectious Processes.* Fifth ed. JB Lippincott Company, 1994
3. Carapetis J. Ending the heartache: the epidemiology and control of acute rheumatic heart disease in the Top End of the Northern Territory. 1998. (Thesis)
4. Hoy WE, et al. the multidimensional nature of renal disease: Rates and associations of albuminuria in an Australian Aboriginal community. *Kidney International* 1998;54:1296-1304.
5. Communicable Diseases Surveillance System, CDC, DH&CS, Darwin, NT. July 2002.
6. Johnston F, Carapetis J, Patel MS, Wallace T, Spillane P. Evaluating the use of penicillin to control outbreaks of acute poststreptococcal glomerulonephritis. *Pediatr Infect Dis J,* 1999;18:327-32.



**Northern
Territory
Government**

Department of Health
and Community Services

Date

**Health Alert:
Outbreak of Acute Post Streptococcal
Glomerulonephritis**

There is an outbreak of post-Streptococcal kidney disease in at the moment.

Other clinics need to be on the lookout for children who may have it.

If any children present with puffy faces, sores or dark coloured urine then check them for:-

- weight (look for sudden increase)
- BP (look for increase)
- urine (look for blood and protein)
- oedema (puffy face and eyes)

Any kids with sores should be given LA Bicillin and treatment for scabies if needed.

Please notify your GP or the DMO on call of any you think might have post-Streptococcal kidney disease (APSGN).

Appendix 1

HEALTH CENTRE CONSENT FORM

Due to the cases of the kidney disease called Acute Post Streptococcal Glomerulonephritis (APSGN) found in our community it is important that we check all children aged between 0 - 15 years to find any more sick children and stop the spread of the infection.

The health staff will be looking at the skin for sores and scabies and checking to see if their eyes or face are puffy.

If any skin sores are present the recommended treatment is an injection of penicillin and/or cream for scabies.

If your consent is given screening will be done at the school where possible or in the community.

If your child requires treatment and you choose to be present we will contact you.

If you do not wish to be present the treatment will be given in the presence of health care staff.

If you have any concerns then please contact the health clinic.

Iparent/guardian
give consent for.....

- to be screened for the kidney problem APSGN **YES / NO**
- to be given a penicillin injection **without my presence** if they have any skin sores **YES / NO**
- to be given a penicillin injection **in my presence** if they have skin sores **YES / NO**
- to be treated with Lyclear cream if they have scabies **YES / NO**

Signed:

Date:



Health Alert

Some children are sick due to a kidney infection called *Glomerulonephritis*. This infection can get in through skin or sores or sometimes a sore throat. This type of infection can spread quickly through lots of children.

**TAKE YOUR CHILD TO THE
CLINIC TO BE CHECKED
IMMEDIATELY**

If they have

- puffy / swollen eyes or face
- dark urine

To stop the sickness from spreading go to the clinic for treatment if you have any skin sores or scabies.

Centre for Disease Control (CDC), Darwin

Ph: 8922 8044 Fax: 8922 8310

OR

Your regional CDC

Nhulunbuy Ph: 8987 0359

Katherine Ph: 8973 9049

Alice Springs Ph: 8951 7550

Tennant Creek Ph: 8962 4259